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EXAMINER

KUMAR, VINOD

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1638

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/554,386

Applicant(s)

CLENDENNEN ET AL.

Examiner

Vinod Kumar

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/17/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/10/06; 8/8/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-6 in the reply filed on October 17, 2007 is acknowledged.

Applicant argues that the claim of Group III directed to a method of producing anthocyanin comprising extracting anthocyanin from a transgenic plant comprising a nucleic acid sequence which encodes a MTP polypeptide of MTP77 be examined with the elected claims of Group I because it includes all the limitations of claims of Group I (response, page 3, lines 18-24). Applicant also argues that an MTP polypeptide does not encompass any polypeptide involved in anthocyanin metabolism (response, page 3, and lines 1-11).

Applicant's arguments were fully considered but were deemed to be unpersuasive.

The instant application is a national stage entry of a PCT Application (PCT/US04/12826, filed 04/26/2004) and is subject to restriction requirement under 35 U.S.C. 121 and 372.

It is maintained that the inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features.

It is maintained that the technical feature linking Groups I-IV appears to be a nucleic acid sequence which encodes an MTP polypeptide. However, Bovey et al. (US Patent No. 6,608,246, Issued Aug 19, 2003, Filed July 14, 1999) teach a transgenic

Art Unit: 1638

tomato plant with increased anthocyanin content. The increased anthocyanin content in the transgenic tomato plant is due to the over-expression of a nucleic acid sequence encoding a chalcone isomerase (an MTP polypeptide). It is maintained that chalcone isomerase is an MTP polypeptide because its expression gets up-regulated in a transgenic plant (tomato) over-expressing myb factor ANT1 protein (see page 25, table 1 of the instant specification).

Therefore, the technical feature linking the inventions of Groups I-IV does not constitute a special technical feature as defined by PCT Rule 13.2, as it does not define a contribution over the prior art. Thus the inventions of Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features.

It is also important to note that invention of Groups III-IV would encompass searching the art pertaining to different methods of extracting anthocyanin from a plant transformed with a nucleotide sequence encoding any MTP polypeptide.

Claim 8 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on October 17, 2007. Accordingly, claims 1-6 are examined on merits in this Office action. This restriction is made FINAL.

This application contains claim 8, drawn to invention nonelected with traverse in the reply filed on October 17, 2007. A complete reply to the final rejection must include

cancellation of nonelected claim or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

2. Initialed and dated copies of Applicant's IDS form 1449 filed in the papers of July 10, 2006 and August 8, 2006 are attached to the instant Office action. The submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Claim Objections

3. Claims 1, 4-5, and 6 are objected to because of the following informalities:

Claim 1 is objected for having improper article before "MTP" in line 2. It is suggested to change "a" to --an--.

Claim 1 is objected for having "MTP" in line 2 in italic font.

Claims 1 and 5 are objected for reciting an arbitrary term "MTP". It is suggested to insert the full-form for the recitation "MTP" within the parentheses.

Claim 4 is objected for having improper article before "plant transformation" in line 2. It is suggested to change "a" to --the--.

Claim 6 is objected for not reciting the term "polypeptide" after "MTP77".

Claim 6 is objected to for failing to comply with 37 CFR 1.821. The claim recites "MTP77". This should be referred to by its sequence identification number which is SEQ ID NO: 2.

In claim 4, line 5, it is suggested to change the phrase "the same type of plant which has not been so transformed" to --an untransformed plant of the same plant species--.

Appropriate action is requested.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a nucleic acid sequence encoding an MTP polypeptide of SEQ ID NO: 2, a transgenic plant or a method of increasing anthocyanin content in a plant, comprising a nucleotide sequence encoding an MTP polypeptide of SEQ ID NO: 2, does not reasonably provide enablement for (a) a nucleic acid sequence encoding an MTP polypeptide having 80% sequence identity to the amino acid sequence of SEQ ID NO: 2, and (b) a nucleic acid sequence encoding any MTP

Art Unit: 1638

polypeptide. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The claimed invention is not supported by an enabling disclosure taking into account the *Wands* factors. *In re Wands*, 858/F.2d 731, 8 USPQ2d 1400 (Fed. Cir. 1988). *In re Wands* lists a number of factors for determining whether or not undue experimentation would be required by one skilled in the art to make and/or use the invention. These factors are: the quantity of experimentation necessary, the amount of direction or guidance presented, the presence or absence of working examples of the invention, the nature of the invention, the state of the prior art, the relative skill of those in the art, the predictability or unpredictability of the art, and the breadth of the claim.

The claims are broadly drawn to an isolated polynucleotide comprising a nucleic acid sequence which encodes an MTP polypeptide having at least 80% sequence identity to the amino acid sequence of SEQ ID NO: 2, a plant transformation vector, a transgenic plant cell or a method of increasing anthocyanin content in a plant comprising said polynucleotide, or a transgenic plant comprising a nucleotide sequence encoding an MTP polypeptide.

Claim 1 is directed to a nucleic acid sequence encoding an MTP polypeptide having at least 80% sequence identity to the amino acid sequence of SEQ ID NO: 2.

The instant specification, however, only provides guidance for how to make and use a nucleotide sequence (SEQ ID NO: 1) encoding tomato anthocyanin vacuolar transporter protein (also called as anthocyanin permease) of SEQ ID NO: 2, in a

Art Unit: 1638

method of producing a transgenic plant with increased anthocyanin content. It is noted that the specification refers MTP77 polypeptide as SEQ ID NO: 2. See page 7, lines 4-10; page 24; page 25, table 1; page 27, lines 23-34.

The instant specification fails to provide guidance on how to make nucleic acid sequences encoding a functional protein having anthocyanin vacuolar transporter activity, and exhibiting 80% sequence identity to SEQ ID NO: 2.

Making all possible single amino acid substitutions in an 506 amino acid long protein like that encoded by SEQ ID NO: 1 would require making and analyzing 19^{506} nucleic acid sequences; these proteins would have 99.8% identity to SEQ ID NO: 2. Because nucleic acid sequences encoding proteins with 80% sequence identity to the 506 amino acid long SEQ ID NO: 2 would encode proteins with 101 amino acid substitutions relative to SEQ ID NO: 2, many more than 19^{506} nucleic acid sequences would need to be made and analyzed.

The specification, page 13, lines 1-5 and 17-26, says:

Variants of MTP polypeptide SEQ ID NO: 2 would comprise conservative amino acid substitutions. Invention also comprises proteins that differ in one or more amino acids from those disclosed as result of deletion or insertions of one or more amino acids in a native sequence.

The specification does not provide guidance in the specification with respect to making amino acid substitutions in SEQ ID NO: 2.

Thus, from the guidance in the specification, it would appear that the vast

majority of the amino acids in SEQ ID NO: 2 could be substituted with any other amino acid.

The instant specification fails to provide guidance for which amino acids of SEQ ID NO: 2 can be altered and to which other amino acids, and which amino acids must not be changed, to maintain anthocyanin vacuolar transporter activity of the encoded protein. The specification also fails to provide guidance for which amino acids can be deleted and which regions of the protein can tolerate insertions and still produce a functional protein.

Making amino acid substitutions in SEQ ID NO: 2 protein is unpredictable. While it is known that many amino acid substitutions, additions or deletions are generally possible in any given protein the positions within the protein's sequence where such amino acid changes can be made with a reasonable expectation of success (without altering protein function) are limited. Certain positions in the sequence are critical to the protein's structure/function relationship, e.g. such as various sites or regions directly involved in binding, activity and in providing the correct three-dimensional spatial orientation of binding and active sites. These regions can tolerate only relatively conservative substitutions or no substitutions (see for example, Wells, *Biochemistry* 29:8509-8517, 1990, see pages 8511-8512, tables 1-2; Ngo et al., pp. 492-495, 1994, see page 491, 1st paragraph).

Furthermore, Keskin et al. (*Protein Science*, 13:1043-1055, 2004, see page 1043, abstract) teach that proteins with similar structure may have different functions.

Furthermore, Thornton et al. (Nature structural Biology, structural genomics supplement, November 2000, page 992, 2nd paragraph bridging columns 1 and 2) teach that structural data may carry information about the biochemical function of the protein. Its biological role in the cell or organism is much more complex and actual experimentation is needed to elucidate actual biological function under *in vivo* conditions. Also see, Guo et al. (PNAS, 101: 9205-9210, 2004, see page 9205, abstract; page 9206, table 1; page 9208, figure 1) who teach that there is a probability factor of 34% that a random amino acid replacement in a given protein will lead to its functional inactivation. In the instant case, such a probability factor will be much higher as the claim encompasses more than a single amino acid changes of the polypeptide defined in SEQ ID NO: 2.

Thus, making and analyzing proteins with a large number of amino acid changes that also have anthocyanin vacuolar transporter activity would require undue experimentation. The specification does not teach how to use these sequences or plants comprising them.

Claim 5 is directed to a nucleotide sequence encoding any MTP polypeptide which would increase anthocyanin content in a plant transformed with said nucleotide sequence. While the specification teaches a nucleotide sequences encoding an MTP polypeptide of SEQ ID NO: 2, it does not teach full scope of nucleotide sequences encoding other MTP polypeptides that confer anthocyanin enhancement in a transgenic plant.

The specification on page 7, line 4-5 refers "MTP" as any gene and its encoded protein that is up-regulated in tomato plants overexpressing tomato myb factor ANT1. This implies that the breadth of the term "MTP" encompasses nucleotide sequences encoding any protein whose expression is up-regulated in a transgenic plant overexpressing tomato myb factor ANT1.

The state of the art teaches that production of anthocyanin is under strict regulation in plant cells to coordinate control of its biosynthetic genes by various transcription factors which are themselves regulated. Protein modifications and/or protein interactions appear to play an important role in the regulation of said transcription factors. See for example, Endt et al. (Phytochemistry 61:107-114, 2002; see page 107, introduction; page 107, figure 1; page 109, figure 2; page 111, 1st column, figure 1; page 113, last paragraph bridging left and right columns). Also see Kitamura et al. (The Plant Journal, 37:104-114, 2004, see in particular page 105, right column, lines 9-16), who teach that TT12 (an anthocyanin vacuolar transporter) was not involved in vacuolar sequestration of anthocyanins in *Arabidopsis*. This study suggested that TT12 was not involved in the accumulation of anthocyanin in *Arabidopsis*.

Thus one of skilled in the art would not expect all MTP polypeptides to cause anthocyanin enhancement to plants. The specification does not teach which MTP polypeptide would confer this trait and which would not. In the absence of guidance, undue experimentation would have been required by one skilled artisan at the time the claimed invention was made to isolate nucleotide sequences encoding other MTP

Art Unit: 1638

polypeptides and use them in increasing anthocyanin in a plant. See also Amgen Inc. v. Chugai Pharmaceutical Co. Ltd., 18 USPQ2d 1016 at page 1027, where it is taught that the disclosure of a few gene sequences did not enable claims broadly drawn to any analog thereof.

Given the claim breadth, unpredictability, and lack of guidance as discussed above, undue experimentation would have been required by one skilled in the art to develop and evaluate nucleic acids encoding proteins at least 80% sequence identity to SEQ ID NO: 2, and sequences encoding any MTP polypeptides. See Genentech, Inc. v. Novo Nordisk, A/S, USPQ2d 1001, 1005 (Fed. Cir. 1997), which teaches that “the specification, not the knowledge of one skilled in the art” must supply the enabling aspects of the invention.

As the specification does not describe the transformation of any plant with a gene encoding the MTP polypeptide, undue trial and error experimentation would be required to screen through the myriad of nucleic acids encompassed by the claims and plants transformed therewith, to identify those with increasing anthocyanin property when expressed in a transgenic plant, if such plants are even obtainable.

Given the claim breadth, unpredictability in the art, undue experimentation, and lack of guidance in the specification as discussed above, the instant invention is not enabled throughout the full scope of the claims.

5. Claims 1-5 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which

Art Unit: 1638

was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The Federal Circuit has recently clarified the application of the written description requirement. The court stated that a written description of an invention "requires a precise definition, such as by structure, formula, [or] chemical name, of the claimed subject matter sufficient to distinguish it from other materials." *University of California v. Eli Lilly and Co.*, 119 F.3d 1559, 1568; 43 USPQ2d 1398, 1406 (Fed. Cir. 1997). The court also concluded that "naming a type of material generally known to exist, in the absence of knowledge as to what that material consists of, is not a description of that material." *Id.* Further, the court held that to adequately describe a claimed genus, Patent Owner must describe a representative number of the species of the claimed genus, and that one of skill in the art should be able to "visualize or recognize the identity of the members of the genus." *Id.*

Finally, the court held:

A description of a genus of cDNAs may be achieved by means of a recitation of a representative number of cDNAs, defined by nucleotide sequence, falling within the scope of the genus or a recitation of structural features common to members of the genus, which features constitute a substantial portion of the genus. *Id.*

See also MPEP Section 2163, page 174 of Chapter 2100 of the August 2005 version, column 1, bottom paragraph, where it is taught that

[T]he claimed invention as a whole may not be adequately described where an invention is described solely in terms of a method of its making coupled with its function and there is no described or art-recognized correlation or relationship between the structure of the invention and its function. A biomolecule sequence described only by a

functional characteristic, without any known or disclosed correlation between that function and the structure of the sequence, normally is not a sufficient identifying characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence.

See also *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ 2d 1016 at 1021, (Fed. Cir. 1991) where it is taught that a gene is not reduced to practice until the inventor can define it by "its physical or chemical properties" (e.g. a DNA sequence).

The claims are broadly drawn to an isolated polynucleotide comprising a nucleic acid sequence which encodes an MTP polypeptide having at least 80% sequence identity to the amino acid sequence of SEQ ID NO: 2, a plant transformation vector, a transgenic plant cell or a method of increasing anthocyanin content in a plant comprising said polynucleotide, or a transgenic plant comprising a nucleotide sequence encoding an MTP polypeptide.

The essential feature of the claim 1 is a nucleotide sequence encoding an MTP polypeptide having 80% sequence identity to the amino acid sequence of SEQ ID NO: 2.

The specification describes a nucleotide sequence (SEQ ID NO: 1) encoding tomato anthocyanin vacuolar transporter protein of SEQ ID NO: 2 (also designated as MTP77), which is involved in increasing anthocyanin content in a plant. See page 24; page 25, table 1; page 27, lines 23-34.

The specification does not describe structure of sequences that have at least 80% sequence identity to SEQ ID NO: 2. The specification does not describe anthocyanin permease or anthocyanin transporter activity for said structures. The

Art Unit: 1638

specification does not describe the function of increased anthocyanin content in plants overexpressing structures (sequences) having 80% sequence identity to instant SEQ ID NO: 2.

There is no description of the structure required for the recited function, and no description of the necessary and sufficient elements of an anthocyanin vacuolar transporter activity of SEQ ID NO: 2. Thus, Applicant's broadly claimed genus encompasses structures whose function is unrelated to the instantly claimed SEQ ID NO: 2.

The only species described in the specification is SEQ ID NO: 1, which encodes SEQ ID NO: 2. Sequences having 80% sequence identity to SEQ ID NO: 2 are not described in the specification and thus their function is unknown.

One of skill in the art would not recognize that Applicant was in possession of the necessary common attributes or features of the genus in view of the disclosed species. Since the disclosure fails to describe the common attributes that identify members of the genus, and because the genus is highly variant, SEQ ID NOs: 1 and 2 are insufficient to describe the claimed genus.

The essential feature of claim 5 is a nucleotide sequence encoding an MTP polypeptide which increases anthocyanin content in a plant transformed with said nucleotide sequence.

The specification describes a nucleotide sequence (SEQ ID NO: 1) encoding tomato anthocyanin vacuolar transporter protein of SEQ ID NO: 2 (also designated as

MTP77), which is involved in increasing anthocyanin content in a plant. See page 24; page 25, table 1; page 27, lines 23-34.

The specification does not describe the structure of the full scope of MTP polypeptides. The specification does not describe the function of MTP polypeptides in increasing anthocyanin content in any plant species. It is important to note that the genus "MTP" encompasses any polypeptide which is up-regulated in a transgenic plant over-expressing myb transcription factor ANT1. This would encompass structures that are not involved in anthocyanin biosynthetic pathway. "MTP" encompasses sequences (structures) of Applicant's broadly claimed genus that are not described, and thus their function is unknown. The specification fails to describe the function of increased anthocyanin content for the full scope of MTP polypeptides.

There is no description of the structure required for the recited function, and no description of the necessary and sufficient elements of a MTP polypeptide of SEQ ID NO: 2.

One of skill in the art would not recognize that Applicant was in possession of the necessary common attributes or features of the genus in view of the disclosed species. Since the disclosure fails to describe the common attributes that identify members of the genus, and because the genus is highly variant, SEQ ID NOs: 1 and 2 are insufficient to describe the claimed genus.

Hence, Applicant has not, in fact, described the following: (a) nucleic acids that encode protein with 80% identity to the amino acid sequence of SEQ ID NO: 2 (b)

Art Unit: 1638

nucleic acid sequences encoding MTP polypeptides, and the specification fails to provide an adequate written description of the claimed invention.

Therefore, given the lack of written description in the specification with regard to the structural and functional characteristics of the claimed compositions, it is not clear that Applicant was in possession of the claimed genus at the time this application was filed.

Accordingly, there is lack of adequate description to inform a skilled artisan that applicant was in possession of the claimed invention at the time of filing. See Written Description guidelines published in Federal Register/Vol.66, No. 4/Friday, January 5, 2001/Notices; p. 1099-1111.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 5 is rejected under 35 U.S.C. 102(e) as being anticipated by Bovy et al.

(US Patent No. US 6,608,246 B1, Issued August 19, 2003, Filed July 14, 1999,

Applicant's IDS).

Claim is drawn to a transgenic plant comprising a plant transformation vector comprising a nucleotide sequence that encodes or is complementary to a sequence that encodes an MTP polypeptide, whereby the transgenic plant has increased anthocyanin content relative to control plants.

Bovy et al. disclose a method of making a transgenic plant (tomato) comprising transformation of a tomato plant with a plant transformation vector which comprises a nucleotide sequence encoding the polypeptide of chalcone isomerase (an MTP polypeptide). The transgenic tomato would also inherently comprise endogenous MTP nucleotide sequence encoding tomato chalcone isomerase. The transgenic plant disclosed in the reference exhibited increased levels of flavonoids which inherently comprises anthocyanin. See in particular, claims 1-13; columns 11-12, example 4; column 14, example 5; columns 15-16, examples 6 and 7.

Accordingly, Bovy et al. anticipated the claimed invention.

Conclusions

7. Claims 1-5 are rejected. Claim 6 is objected. Claims 1-4 and 6 are free from prior art.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinod Kumar whose telephone number is (571) 272-4445. The examiner can normally be reached on 8.30 a.m. to 5.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on (571) 272-0803. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

Application/Control Number: 10/554,386

Page 18

Art Unit: 1638

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Vinod Kumar
Patent Examiner
AU 1638

1/4/2008